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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/659,210	09/09/2003	Joseph C. Fjelstad	SIPI.P108	5685

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EXAMINER

SEMENENKO, YURIY

ART UNIT	PAPER NUMBER
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2841

DATE MAILED: 08/10/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/659,210

Applicant(s)

FJELSTAD ET AL.

Examiner

Yuriy Semenenko

Art Unit

2841

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 June 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-29 and 84-98 is/are pending in the application.
- 4a) Of the above claim(s) 3-29 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2 and 84-98 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. Amendment filed on 06/08/2006 has been entered.

In response to the Office Action dated 01/10/ 2006, Applicants have amended claims 1 and 2.

Claims 84-98 are newly added. Claims 3-29 have been withdrawn from consideration. Claims 1-29 and 84-98 are now pending in the application.

Response to Arguments

2. Applicant's arguments filed 06/08/2006 have been considered but they are not persuasive.

In response to applicant's arguments with respect to claims 1 and 2 against the references individually, Applicant cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). In this case, APA clearly teaches first 111A and second 111B conductive vias extending from the first surface to the second surface of the substrate 101 (Specification, page 2, [0004]).

Claim Objections

3.1. Claim 1 objected to because of the following informalities:

Line 13: "second" should be changed to – a second - for proper antecedence basis. Appropriate correction is required.

3.2. Claims 84, 86 and 93 are objected to for improper antecedent.

Claims recite the limitation "the first electronic cable". There is not such limitation in claim 1. There is insufficient antecedent basis for this limitation in claims.

Appropriate correction is required.

3.3. Claim 93 objected to because of the following informalities:

Line 1: "the first cable end" is confusing. Unclear applicant is referring to the first electronic cable or to the first end of the electronic cable.

Appropriate correction is required.

3.4. Claim 98 is objected to for improper antecedent.

Claims recite the limitation "the first daughter board". There is not such limitation in claim 94. There is insufficient antecedent basis for this limitation in claims.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the fourth paragraph of 35 U.S.C. 112:

Subject to the following paragraph, a claim in dependent form shall contain a reference to a claim previously set forth and then specify a further limitation of the subject matter claimed. A claim in dependent form shall be construed to incorporate by reference all the limitations of the claim to which it refers.

As to claim 85: Claim 85 objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Claim 85 refers to claim 84. Claim 84 teaches that the first electronic cable not necessarily is a dual conductor cable. It means that dependent claim 85 (which includes only a dual conductor cable but does not include first electronic cable) does not include every limitation of the claim 84.

Claims 87 and 88 depend on claim 85 and have same deficiency.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5.1. Claims 1-2, 84, 86, 89-93 are rejected under 35U.S.C. 103(a) as being obvious over Admitted by Applicant (Prior Art, hereinafter "APA") in view of Plonski (Patent # 4679321) hereinafter Plonski and in view of Snyder et al. (Patent #5046966) hereinafter Snyder.

As to claim 1: APA discloses in Fig. 1 (Specification, page 1) an assembly for conducting an electronic signal 100, the assembly comprising: a substrate 101 having first and second surfaces; first 111A and second 111B through-holes within the substrate, each through-hole having a first opening at the first surface and a second opening at the second surfaces; a first conductive element (conductive wall of the first through-hole 111A) disposed within the first through-hole and extending from the first

surface to the second surface to form a first conductive via; a second conductive element (conductive wall of the first through-hole 111B) within the second through-hole and extending from the first surface to the second surface to form a second conductive via,

except , APA doesn't explicitly teach two things:

1. an electronic cable having a first and second ends, the first end of the electronic cable being inserted into the first end of the first through-hole; and
2. the first end of the electronic cable being in electrical contact with the first conductive via.

Plonski discloses in Fig. 2 a first electronic cable 212 inserted into the first through-hole (close to 205, column 4, lines 9-11) of the substrate 201.

Therefore it would have been obvious to one of ordinary skill in the art, at time the invention was made, for APA to include in his invention that an electronic cable having a first and second ends, the first end of the electronic cable being inserted into the first end of the first through-hole.

Benefit of doing so is to minimize quantity of metal layers of the backplane.

Snyder discloses in Fig. 1 the first end 31' of the electronic cable 11 being in electrical contact with the first conductive via 17 (column 3, lines 6-11).

Therefore it would have been obvious to one of ordinary skill in the art, at time the invention was made, for APA to include in his invention that the electronic cable being in electrical contact with the first conductive via to provide electrical connection with motherboard.

As to claim 2: APA as modified, discloses the assembly having all of the claimed features as discussed above with respect claim 1,

except , APA doesn't explicitly teach two things:

1. the second end of the electronic cable is inserted into the first end of the second through-hole and in electrical; and
2. the second end of the electronic cable being in electrical contact with the second conductive via.

Plonski discloses in Fig. 2 a first electronic cable 212 inserted into the first through-hole (close to 216, column 4, lines 9-11) of the substrate 201.

Therefore it would have been obvious to one of ordinary skill in the art, at time the invention was made, for APA to include in his invention that the second end of the electronic cable is inserted into the first end of the second through-hole and in electrical.

Benefit of doing so is to minimize quantity of metal layers of the backplane.

Snyder discloses in Fig. 1 the first end 31' of the electronic cable 11 being in electrical contact with the second conductive via 17 (column 3, lines 6-11).

Therefore it would have been obvious to one of ordinary skill in the art, at time the invention was made, for APA to include in his invention that the electronic cable being in electrical contact with the second conductive via to provide electrical connection with motherboard.

As to claim 84: APA as modified, discloses the assembly having all of the claimed features as discussed above with respect claim 1,

except , APA doesn't explicitly teach the first electronic cable is selected from among a group of cables consisting of single conductor cables and dual-conductor cables, and combinations thereof.

Plonski discloses in Fig. 1B the electronic cable 110 is of single conductor 116 cables

Therefore it would have been obvious to one of ordinary skill in the art, at time the invention was made, for APA to include in his invention that the first electronic cable is selected from among a group of cables consisting of single conductor cables and dual-conductor cables, and combinations thereof to provide electrical connection in the motherboard.

As to claim 86: APA as modified, discloses the assembly having all of the claimed features as discussed above with respect claim 1,

except , APA doesn't explicitly teach the first end of the first electronic cable is electrically coupled to the first via proximate the first opening of the first through-hole to

mitigate signal reflection.

Snyder discloses in Fig. 1 the first end 31 of the first electronic cable 11 is electrically coupled to the first via 17 proximate the first opening of the first through-hole to mitigate signal reflection.

Therefore it would have been obvious to one of ordinary skill in the art, at time the invention was made, for APA to include in his invention that the first end of the first electronic cable is electrically coupled to the first via proximate the first opening of the first through-hole to mitigate signal reflection to provide densely packaged electrical connection, as taught by Snyder (column 1, lines 60-65).

As to claim 89: APA as modified, discloses the assembly having all of the claimed features as discussed above with respect claim 1, wherein the substrate 101, Fig. 1 comprises a plurality of layers (Specification , page 2, [0004]).

As to claim 90: APA as modified, discloses the assembly having all of the claimed features as discussed above with respect claim 1, herein the substrate comprises at least one conductive, 113, Fig. 1, (Specification , page 2, [0004]).

As to claims 91 and 92: APA as modified, discloses the assembly having all of the claimed features as discussed above with respect claim 90,

except , APA doesn't explicitly teach said at least one conductive trace includes a conductive trace coupled to ground potential or to source voltage.

Snyder discloses in Fig. 1 said at least one conductive trace 15 includes a conductive trace coupled to ground potential (column 3, lines 51-59) or to source voltage (column 3, lines 21-29).

Therefore it would have been obvious to one of ordinary skill in the art, at time the invention was made, for APA to include in his invention that said at least one conductive trace includes a conductive trace coupled to ground potential or to source voltage to provide proper electrical grounding for cables, as taught by Snyder (column 6, lines 5-9).

As to claim 93: APA as modified, discloses the assembly having all of the claimed features as discussed above with respect claim 1,

except , APA doesn't explicitly teach the first cable end is secured within the first conductive via by a securing engagement selected from among a plurality of securing engagements consisting of solder, press fitted ends, frictionally secured ends, retaining hardware, and combinations thereof.

Snyder discloses in Fig. 1 the first cable end 31 is secured within the first conductive via 17 by a securing engagement is pin 31' – socket member 51 (column 5, lines 15-29)

Therefore it would have been obvious to one of ordinary skill in the art, at time the invention was made, for APA to include in his invention that the first cable end is secured within the first conductive via by a securing engagement selected from among a plurality of securing engagements consisting of solder, press fitted ends, frictionally secured ends, retaining hardware, and combinations thereof to provide robust electrical connection.

As to claim 94: APA discloses in Fig. 1 (Specification, page 1) an assembly 100 comprising: a substrate 101 having first and second surfaces; first 111A and second 111B through-holes within the substrate, each through-hole having a first opening at the first surface and a second opening at the second surface; a first conductive element (conductive wall of the first through-hole 111A) disposed within the first through-hole and extending from the first surface to the second surface to form a first conductive via; a second conductive element (conductive wall of the first through-hole 111B) within the second through-hole and extending from the first surface to the second surface to form a second conductive via; a first electronic member 103A coupled to the first conductive via ; and a second electronic member 103B coupled to the second electronic via,

except , APA doesn't explicitly teach two things:

1. an electronic cable having a first and second ends, the first end of the electronic cable being inserted into the first end of the first through-hole and the second end of the electronic cable inserted into the first end of the second through-hole; and
2. the first end of the electronic cable being in electrical contact with the first conductive via, the second end of the electronic cable being in electrical contact with the second conductive via.

Plonski discloses in Fig. 2 an electronic cable 212 having a first and second ends, the first end of the electronic cable being inserted into the first end of the first through-hole (close to 205, column 4, lines 9-11) and the second end of the electronic cable 212 inserted into the first end of the second through-hole(close to 216) of the substrate 201.

Therefore it would have been obvious to one of ordinary skill in the art, at time the invention was made, for APA to include in his invention that an electronic cable having a first and second ends, the first end of the electronic cable being inserted into the first end of the first through-hole and the second end of the electronic cable inserted into the first end of the second through-hole, to minimize quantity of metal layers of the backplane.

Snyder discloses in Fig. 1 the end 31' of the electronic cable 11 being in electrical contact with the conductive via 17 (column 3, lines 6-11).

Therefore it would have been obvious to one of ordinary skill in the art, at time the invention was made, for APA to include in his invention that the first end of the electronic cable being in electrical contact with the first conductive via, the second end of the electronic cable being in electrical contact with the second conductive via to provide electrical connection with motherboard.

As to claim 95: APA as modified, discloses the assembly having all of the claimed features as discussed above with respect claim 1, wherein the first electronic member 103A, Fig. 1 comprises a first daughter board 119 having a conductive path conductively coupled to the first conductive via 111A.

As to claim 96: APA as modified, discloses the assembly having all of the claimed features as discussed above with respect claim 95 further comprising a conductive pin 123, Fig. 1 having first and second ends, the first end of the conductive pin sized to fit into the second end of the first through-hole 111A, and configured to electrically engage the first conductive via, and the second end of the pin conductively coupled to the first conductive path, Fig. 1 and Specification, page 1, [0004].

As to claim 97: APA as modified, discloses the assembly having all of the claimed features as discussed above with respect claim 96, wherein the daughter board 103A, Fig. 1 further comprises a conductive engagement member 105 for mechanically and electrically coupling the first conductive path to the conductive pin 123, the conductive engagement member 105 having a distal end coupled to the first conductive path, and a proximal end having a mechanical capture 121 to releasably engage to the second end of the conductive pin 123.

As to claim 98: APA as modified, discloses the assembly having all of the claimed features as discussed above with respect claim 94, further comprising an edge connector 105, Fig. 1 and Specification, page 2, [0004] with parallel first and second sides, the edge connector being secured to the substrate, wherein the daughter board 119 is fixably secured between the parallel first and second sides of the edge connector 105.

Conclusion

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within

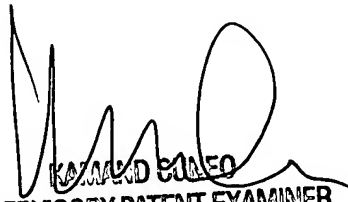
TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

7.1 Any inquiry concerning this communication or earlier communications from the examiner should be directed to Yuriy Semenenko whose telephone number is (571) 272-6106. The examiner can normally be reached on 8:30am - 5:00pm.

7.2. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kamand Cuneo can be reached on (571)- 272-1957. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

7.3. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

YS


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